Certificate No:
TAE000002G

TYPE APPROVAL CERTIFICATE

This is to certify:

That the High Voltage Cable

with type designation(s)
RFOU-HCF 6/10(12)kV P30 / 1100°C / 30 minutes

Issued to
Draka Norsk Kabel - part of the Prysmian Group
DRAMMEN, Norway

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application :

General power.
HydroCarbon Fire resistant. Flame retardant in bunch Cat A. Halogen free. Low smoke.

Voltage (kV)	**6/10**
Temp. class (°C)	**90**

This Certificate is valid until **2019-06-22**.

Issued at **Høvik** on **2015-06-29**

for **DNV GL**

DNV GL local station: **Oslo Maritime and CAP**

Approval Engineer: **Ivar Bull**

Marit Laumann
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Job Id:
Certificate No: **TAE000002G**

Product description

RFOU cable produced by Draka Cable Wuppertal GmbH.
HCF protective layer applied by Draka Norsk Kabel.

Construction:

Conductors:	Tinned, stranded copper
Conductor screen:	Semiconducting compound
Core insulation:	EPR
Insulation screen:	Semiconducting compound
Screen:	Tinned copper wire braid
Filler:	Flame retardant halogen-free thermoset compound
Metal covering:	Tinned copper wire braid
Outer sheath:	SHF2 or SHF Mud
HCF protection	Extruded heatblock compound
Tape:	Lapped glassfibre tape
Overall sheath:	SHF1

No of cores:	Cross sectional area [mm^2]
1	120 – 300
3	120 – 300

Application/Limitation

The requirements of SOLAS Amendments Chapter II-1, Part D, Reg. 45, 5.2 (provision to be taken to limit Fire Propagation along Bunches of Cables or Wires) are fulfilled without any additional measures.

Type Approval documentation

Tests carried out

Standard cable: IEC 60092-354, IEC 60332-3-22, IEC 60754-1/2, IEC 61034-1/2 and NEK 606.
On special request: Cold bend (-40 °C)/impact (-35 °C) test: CSA C 22.2 No 0.3-M1985.

Standard	Release	General description	Limitation
IEC 60092-350	2008-02	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-360	2014-04	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables.	
IEC 60092-354	2014-08	Electrical installations in ships - Part 354: Single- and three-core power cables with extruded solid insulation for rated voltages 6 kV (Um = 7,2 kV) up to 30 kV (Um = 36 kV)	
IEC 60331-1/2	2009-05	Fire resistance / Circuit integrity – Test for method for fire with shock at temperature of at least 830ºC for cables rated up to and including 0,6/1 kV	120 min. + 15 min. cooling period.

Standard	Release	General description	Limitation
IEC 60331-21	1999-04	Tests for electric cables under fire conditions – Circuit integrity – Part 21: Procedures and requirements – Cables of rated voltage up to and including 0,6/1,0 kV	90 min. + 15 min. cooling period.
IEC 60332-3-22	2009-02	Tests on electric and optical fibre cables under fire conditions – Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A	Bunch test Category A
IEC 60754-1	2011-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Low Halogen: <0,5% Halogen
IEC 60754-2	2011-11	Test on gases evolved during combustion of materials from cables - Part 2: Determination of acidity (by pH measurement) and conductivity	Halogen free: pH > 4,3 Conductivity < 10µS/mm
IEC 61034-1/2	2013-07 2013-09	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance ≥60%
NEK TS606 Ed. 4	2009-05	Cables for offshore installations. Halogen-free and/or mud resistant. Technical specification.	HCF test Section 4.5 30 minutes
IEC 61892-4	2008-01	Mobile and fixed offshore units - Electrical installations - Part 4: Cables	HCF test Annex C 30 minutes

Marking of product

"meter" "year" DRAKA NORSK KABEL RFOU-HCF 6/10(12)kV P30 1x 70/16 mm2 HCF 1100/60 FLEX - FLAME

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the periodical assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Survey to be performed at least every second year.
END OF CERTIFICATE